

## CLAIMS

We claim:

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1. A device comprising a microdroplet transport channel etched in substrate, said substrate selected from the group consisting of silicon, quartz and glass, said channel comprising one or more hydrophobic regions.
2. The device of Claim 1, wherein said device further comprises a gas-intake pathway in fluidic communication with said microdroplet channel.
3. The device of Claim 2, wherein said device further comprises a gas vent in fluidic communication with said microdroplet channel.
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4. The device of Claim 3, wherein one of said hydrophobic regions is positioned in said channel between said gas-intake pathway and said gas vent.
5. The device of Claim 2, further comprising an air chamber in communication with said gas-intake pathway.
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6. A device comprising a microdroplet-transport channel, said channel comprising i) first and second ends, and ii) a hydrophobic regions disposed within said channel between said first and second ends.
7. The device of Claim 6, wherein said device further comprises a gas-intake pathway i) positioned internal to said first end of said channel, and ii) in fluidic communication with said microdroplet channel.

8. The device of Claim 7, wherein said device further comprises a gas vent i) positioned internal to said second end of said channel, and ii) in fluidic communication with said microdroplet channel.

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9. The device of Claim 8, wherein said hydrophobic region is positioned in said channel between said gas-intake pathway and said gas vent.

10. The device of Claim 6, wherein said first end of said channel comprises a inlet port for the introduction of liquid.

11. The device of Claim 7, further comprising an air chamber in communication with said gas-intake pathway.

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12. The device of Claim 6, wherein said device is fabricated from a glass, quartz or silicon substrate.

13. The device of Claim 12, wherein said channels are between 5 and 20  $\mu\text{m}$  in depth and between 20 and 1000  $\mu\text{m}$  in width.